The Effect of Using Laser Engraving on Seam Properties of Weaving Denim Products

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Abstract:
Laser engraving can be used for quick and easy of diverse textiles and fabrics. Textiles suitable for engraving with a laser include materials as different as linen, cotton, silk, felt, and more. Laser engraving refines the surface of the material, thus increasing the quality of the fabric. Unlike in printing, laser engraving additionally produces a haptic effect. Particular benefits when working with the laser on textiles are its speed, flexibility and precision. Moreover, the nesting feature included in the laser software ensures economical use of the fabrics.

In this study three different seam types were used to sew denim fabric. Seam type 1 is superimposed seam type (SSa), seam type 2 is lapped seam type (LSb) and seam type 3 is lapped seam type (LSc) by using two different stitch types (Stitch type 516 and Stitch type 301). Flatbed laser machine was used to engrave shapes on denim fabric before and after sewing by using two different speeds (speed 1 180 m/s, speed 2 400 m/s). Tests were applied to determine the seam properties like thickness, breaking force, seam pucker and appearance. All tests were done according to standards and took place into conditioned atmosphere of 21ºC and 65% RH. Comparisons have been made among the three different seam types and two different machine speeds; this was done with reference to durability, efficiency and appearance.

Keywords
- Laser engraving,
- Laser machine,
- Laser beam,
- Denim fabric.

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